

February  
1986

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#### MEETING NOTES - January 1986

The January LIST meeting was held at the Huntington Public Library at 2PM. There were 24 members in attendance. Paul D. reported that as of January 12th:

LIST has had 133 members at one time or another - Current membership stands at 122 - As of the beginning of the meeting, 60 members are paid up past February 1. (By the end of the meeting, there were 70). - Current treasury balance is \$693.84 which should be sufficient to maintain operations at existing levels, for the coming year.

Paul mentioned that some exchange user groups have a library tape and have expressed an interest in trading. This was well received and Martin Helfgott volunteered to write to the likely choices. Paul was asked some questions about library type versions, they are covered in the newsletters.

Chuck Russell, our new president, was then installed and continued the conduct of the meeting. Nazir P. suggested that other computers be demoed at the meeting. There were pros and cons discussed and the general consensus seemed that it would do no harm.

Chuck suggested meeting themes, rather than the "free-for-all" style of past meetings. Members requested the following:

- Machine Code Programming
- "Other" languages (Forth, PASCAL, C, LISP, LOGO etc)
- BASIC Programming (Beginners, Intermediate, advanced)
- Disk drives (the 5 popular systems)
- Hardware Breakers (e.g., Interface III, Magic Button)
- Printers (full size)
- Sound & Beep (use of the sound chip)
- Artificial Interligence
- MODEMS (communications, BBS's)
- Interfacing (A/D & D to A converters, controll of external devices etc.
- Voice Recognition & Synthesis
- Graphics

In addition to the main theme or presentation, miscellaneous items would still be brought to the members attention as they occur. This is particularly true of news items (e.g., Gavilan printer, cheap Modems), Next months main theme will be:

#### PRINTERS

If you have a printer that you'd like to work better with your TS printer, bring it. Bob G. has interfaced a number of printers and will have serial and parallel interfaces available. Bob mentioned that he has even hooked up his Silver Reed XP-400 (Daisywheel) to do graphics.

Andy G. urged local members to make more use of our SIC section on Zebra's BBS. (See below) The board is up and running every weekday from 1730 hours to 0900 hours; all day Saturday and Sunday.

Stewart N. gave us a quick rundown on the Timex 2050 Modem. He noted that Anchor automation originally made some 10,000 2050 boards for Timex, only about 2500 of them were ever "packaged". Westridge communication was chosen by Anchor to market what was left after Timex bailed out. They had been selling off the completed units to vendors like E.A. Brown and Zebra. Recently, they sold the populated boards at auction. These have been picked up by Dave Clifford and others on the West Coast and by Zebra. The boards are essentially complete Modems, but are untested and have no documentation, power supply or software. Clifford is selling them for \$25 postpaid, guaranteed. Stewart sold untested boards to members, after the meeting, for under \$10.00 each. They sold like hotcakes. (mine works). He noted too, that these boards are simply laid-out single sided and an experimenters delight. There are, for example, two LS138's (which can be re configured for almost any I/O address), an 8251, on board crystal/clock etc. Many of these parts are used in the Scott Foresman Interfacing books (also sold to meeting attendees - at \$3 each). He noted that a TS 1000 power supply will run the Modem (though most of the logic chips get their power from the computer). Jeff Street is developing 64 column software for use with the 2050 Modem. Cem B. says he got 5 out of 6 of these 2050 boards working in just a few minutes.

#### DEMOES

##### Oliger Disk Drive

Bob G. demoed the Oliger disk drive interface. He used Oligers Mother board (required), disk drive card (about \$98) and an enclosed dual drive system in an Aerco case. Bob notes that any Shugart compatible (34 pin) drive will work with Oligers system.

The system is "primitive" in that it copies all of RAM to disk each time it is used. This means you get 8 files per disk. A one-K program takes as much disk space as a full blown game or data base. Bob likes this system in that, with disks costing less than 75c in bulk, it provides a convenient storage method for his needs. A heated discussion on the advantages of physical disks versus directories (trees, paths etc.) followed.

#### SUBSCRIPTION NOTICE

Please check your mailing label. Above your last name you will see the month and year in which you will receive your last issue of LISTing (LLIST) Newsletter. If this number does not agree with your records please let us know

**LIST GROUP**  
P.O. BOX 438  
CENTERPORT, N.Y. 11721-0438

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## Meeting notes continued:

It is assumed that Ray Kingsley software, if ever produced, or John's own upgrades, will address the needs of the "random access" people. For now, a singular advantage of the "block" copy method is the use of the "magic button" John O. supplies a schematic for a simple NMI circuit which allows you to take a "snapshot" of your computer's state and record it on disk. When reloaded, the program "hits the ground running" right where it left off. This is clearly a must for that uncopyable software you'd like to have on disk. Saving time for 48K is 4 seconds.

The Oliger system supports both 2068 and Spectrum modes and requires no twistor. He found he needed a 100pf capacitor or pin 3 of IC5 for the system to work with his 'dog' machine. Otherwise there were no problems. The board uses the 1770 controller chip. Jeff S. promises OS64 compatibility. He needs to change 2 bytes.

Printer - Gavilan

John Bell demoed his simple "centronics" like interface and the \$20 Gavilan thermal transfer printer. The Gavilan is a dot matrix printer and John has developed software to utilize all 220 available characters. Graphics capability is unknown. While no direct source of replacement ribbons has been found yet, John notes that Okimate 10 ribbons can be rewound to fit the Gavilan cartridge.

Final Notes

Myles Cohen requested that more members volunteer to help generate the newsletter database. Remember, if you do, you will receive a year or two's worth of exchange newsletters from another group, to review. Contact Myles at (212)427-017 to volunteer.

Zebra promises CP/M within a month (next meeting??) Cost should be under \$100. Contact Zebra for details.

Some dozen members ordered Zebra Twistor board #1 at the meeting. Stewart promised to bring TS 1000 power supplies to the next meeting. He'll sell these very cheaply.

John Bell brought along a 1016 Rampack with dip switches installed on the case- for bank switching.

Tell Stewart what TS 2068 software or carts you want. He'll sell them at meeting for \$3 or so.

NEXT MEETING

Sunday February 9th 1986, Huntington Public Library, 2PM.



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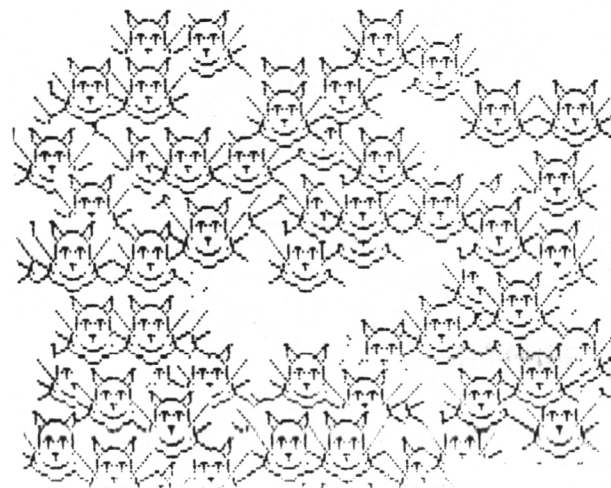
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HOW MANY COMPLETE  
CAT FACES CAN YOU  
FIND IN THIS GANG?



#22



Steve Kaye spotted the following article in Computer Living New York. While it may be too late for you to win the "contest" Mr. King talks about, why not drop a line to his "Yes, Virginia" address telling him how you use your home computer. Don't forget to mention what kind it is.



## King's Corner

# "Yes, Virginia, There is a Santa Claus..."

By Joe King

Many years ago, when New Yorkers had a real choice of what daily newspaper to read, the New York Sun ran a letter to the editor on the front page. A little girl, Virginia, plaintively wrote that one of her friends had claimed Santa Claus was a myth. Her dad told her to write, because if she read it in the Sun it was true. The editorial response (like this column) was headlined "Yes, Virginia..."

Last month Computer Systems News ran an editorial headlined "Real Men Don't Use Home Computers". Aside from the sexist overtones (humor is frequently dependent on derogation of a group other than the one the humorist belongs to), the editor definitively states that there is NO market for a home computer.

He then goes on to play up Mad Magazine's "humorous" article titled "Practical Computer Programs for Normal Everyday Use," citing the "What I wore" program, a database for over-crowded closets, the "Useless Gift" program to track who gave what to you, so you can fearlessly give it to someone else, and so on.

After several of his own suggestions (e.g., tracking local water use patterns to obtain the best time to wash your dishes) he invites his readers (ostensibly, they are power corporate users and systems people) to join in this game and submit "innovative" uses for a home computer, which will prove his point.

Of course, he is working at a disadvantage. The real "Men" he refers to, are people of both sexes who work with computers all day and at home, many at least, don't want to talk "shop" with mere hobbyists or home users; so he doesn't get the chance to hear from normal people - only "Real Men."

The conventional wisdom among computer "mavens" is that the highly touted home market died aborning because nobody could come up with a reason for a home computer for the mass market. Sure, there were a few hobbyists who were fascinated by the technology; some, with deep pockets, got hooked on telecomputing through the Source, Compuserve and computer bulletin boards; a few wanted to create their own programs for fun or profit; and some had quasi-business-type needs for word processing, spreadsheets and database management. Nevertheless, although the tools were there, the compelling reason to have and use a computer at home was missing.

Many home software developers thought that games were the only programs of interest for home users. Hardware manufacturers agreed, but added capabilities for light business use. No one came up with real reasons to invest in and use these high powered machines at home.

I did a small, very inaccurate and not at all projectable survey and found that most of the home users I contacted used their machines either as an extension of the PCs they worked on at the office, or else worked at home on projects that had a business orientation (professional writers, moonlighters, tax professionals, etc.). Some said they used the computer for games and for teaching their children. One used a word processor and databased-concordance to write sermons. Some intrepid souls even kept their home checkbook on the computer. And so on.

### Let's have a Contest

I'm willing to bet that many of you have come up with valid uses for a home computer that the power users and data processing "mavens" have never thought of. So let's have a contest: The First Annual Yes, Virginia, There Is A Use For Home Computers Contest. Here are the rules: One entry to a letter; each entry to be 150 or fewer words; specify which computer you use and if it involves commercial programs, the name of the program and the publisher; if you wrote the program, what language you used. Send entries to "Yes Virginia", P.O. Box 20025, Dag Hammarskjold Center, New York, NY 10017. The best entry (in my own subjective opinion) will get a prize (I will choose a suitable one after I see the entries). All entries will be sent on to the editor of Computer Systems News to show him that some "REAL" people use home computers. CSN is not the N.Y. Sun, and just because I read it there doesn't make it true. I'll report on the results of this contest next month.

### To protect or not, that is the question

Copy protection is an industry bugaboo. Without it, the publishers say, every program sold will result in dozens, if not hundreds, of illegal copies. The creators and innovators won't get paid for their work and therefore there will be no incentive to write new programs. Nonsense, say the users. Copy protection gets in the way of effective use of the program. Some can't be con-

veniently copied to a hard disk; others require the use of the distribution floppy disk even if the program is put on the hard disk. If a disk fails, you may lose the use of the program until the company sends (at a charge) another copy.

Bring down the retail price, say some users, and the incentive to pirate will be gone. Baloney, say the publishers, there are illegal copies of Borland's Sidekick and Turbo Pascal, and those are inexpensive to buy.

I don't like copy protected disks, but I don't have the answer. Last month I talked with Jeff Fox and Jake Geller of Fox and Geller, the publishers of many utilities for dBase and Lotus. They originally did not copy protect their dBaseIII program generator. When they came out with a version for dBaseIII, they followed Ashton-Tate's lead and added copy protection. Recently, they discontinued protection from all their programs. According to Fox, they saw no change in sales with or without protection. However, it was more profitable to sell unprotected disks, since they didn't have the added cost of the protection scheme.

Wordstar was said to be the most pirated program in the marketplace. When Wordstar 2000 was released it was protected. Subsequently, Micropro removed the protection. Borland is now selling an unprotected version of Sidekick for a small upcharge. The whole concept of User Supported Software is that you can make copies of it and give it to your friends; if they want to, they can pay a nominal fee and become registered users and get support from the developers. Which is the wave of the future? I don't know. But I can say that any protection scheme that inhibits the continuous and effective use of a program is counter productive and must be discontinued.

The best way for the user community to make its feelings known is to not buy this type of protected software, and to write to the companies concerned. Representatives of Lotus admitted to me that they are aware of the problem and are considering alternatives. But for the most part, large software companies are interested in large corporate customers. They talk of site licensing and other alternative that don't help the single user. Let them know how many sales they are losing and maybe, just maybe, they'll listen. Of course, this requires a commitment on the part of the user; can you live without dBaseIII or Lotus, for a while?

### Got those hard disk file-finding blues?

Keeping track of the files on a floppy disk is a bother. You always end up putting the wrong disk in the drive and have to switch to another. Hopefully you are using some sort of cataloging system to keep track of everything. Well, if you are using a 10 or 20 meg hard disk, the problem is multiplied. Good old DOS gave you a hierarchical directory system to bring some order to this madness, but you still have to find the right directory, subdirectory, sub-sub and so on.

Copying and deleting files, making new directories and erasing old ones, changing labels, examining files are all a pain in the neck. But it doesn't have to be so. There are several utilities that take the work out of it. The one that I use and like best is XTREE by Executive Systems, Inc. This handy program (not copy protected and reasonably priced) boots up and gives you a graphic picture of your directory tree structure. Then, by moving the cursor you can examine the contents of each directory - list the files, print them to screen (in either ASCII or hex), delete them, copy them, rename them. You can make a new directory and move files into it. You can mass manipulate them with wild cards. As you use XTREE it keeps a running display of what you're doing, the number of files, the amount of bytes (both on the disk and the current directory) and more. I find I use it frequently throughout the day and wouldn't be without it.

Copyright 1985, Joseph P. King. All Rights Reserved. Joseph P. King is president of Four Seasons Publishing Co., Inc. (a New York based consulting firm) and is host of The Personal Computer Show heard Sunday nights at 8 P.M. on WBAI-FM 98.5.

## ADDITIONS TO THE COMPUTER DICTIONARY

- DICTIONERY** - The relationship between dictionary and dictionary is similar to that between stationery and stationary, with the possible exception that one is not a word.
- RUMERS** - cathartic belchings which contain snippets of misinformation or potential misinterpretations
- PROGRAMME** - a set of algorithms used to solve a problem and written before computers were invented.
- EXPONET** - device associated with catching Mantissa rays
- MAYBE** - contraction of the words may and be. As in "This maybe a good thing", to quote Sir Clive
- PERIPHREALS** - same as peripherals

## VENDOR REPORT

Glen D. Clifford 2050 Modems-BARE \$25.00  
13910 Halldale Ave. Westridge Closeouts.  
Gardena, CA 90249 No Software, case or P.S.  
(213)516-6648 10 day exchange privilege

## BARGAIN CORNER

Texas Instruments Data Recorder \$10 Toys-R-Us, if available  
Double-Dubbing Cassette Deck \$20 ODD-LOT-check price, it may change.  
Monaural



[illegible]

001	MC	001	001
002	00	002	002
003	003	003	003
004	004	004	004
005	005	005	005
006	006	006	006
007	007	007	007
008	008	008	008
009	009	009	009
010	010	010	010
011	011	011	011
012	012	012	012
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100	100	100	100

[illegible][illegible][illegible][illegible]

Respectfully yours,  
John Bell

Pederksen  
J.D.  
H.E.  
Rapid,  
Idaho  
P.O.  
Box  
4607

```

1000 LET NUNE = 1
1005 LET DENH = 4
1010 BEST = NUNE / DENH
1015 LET RATIO = BEST
1020 PRINT RATIO
1025 GOTO 1000

```

Respectfully, Yours,  
William J. Cooper, Jr.  
The William J. Cooper, Jr.  
Fiduciary Fund, Inc.  
Grand Rapids, MI 49506

1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497</
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[illegible]

# FEEL

Brother International  
Typewriter Division  
PO Box 159  
Piscataway, N.J. 08854

1166 Cedar Avenue  
Shady Side, Maryland 20764  
24 November 1985

Dear Timex/Sinclair User Club:

Dear Sir:

Members of our user group, and others in the USA and U.K. have successfully interfaced your EP-44 to a number of Timex/Sinclair computers. Copies of some of the implementations are attached. Please feel free to provide this information to anyone who asks.

As owners of the EP-44, I think we can all say that we are very pleased with the EP-44's abilities as a typewriter, mini word processor, and computer printer. There are some technical questions, however, which we would like to resolve. They are:

1) Is it possible for the EP-44 to receive ~~Ext~~ from an outside source (e.g., then the RS 232 port) and store it in NVM? If special software is required to modify the codes of some of the characters (e.g., control codes), we are sure it can be developed, and would be happy to try to generate the algorithms, based on your hardware requirements. Many of us are even willing to make hardware modifications to achieve this end.

2) Is it possible to change the EP-44's character set. That is, if the dot pattern: are stored in ROM or EPROM, can this chip be replaced, and what are the addresses of the codes. Better yet, can the codes be placed in NVRAM and accessed from there (see next question).

3) Can the CPU in the EP-44 be accessed? And, what type of microprocessor is it?

The information requested above, if available, would help us to dramatically improve the already outstanding features of the EP-44. For example, with these specs, we feel that graphics could be generated, that the EP-44 would provide a 4K editable print buffer, new character sets could be redefined and finally, if control of the CPU can be gained if, the necessary MC software for driving a modem could be built into, say, 1 or 2K of the NVRAM.

Please give this request your serious consideration and thank you for your help.

Yours very truly,

P.J. Donnelly



Application  
RESEARCH  
Corporation

Dayton, Ohio 45402

#### BROTHER ELECTRONIC TYPEWRITER EP 44 SPECIAL CHARACTER SET

1	IS 7Bh OF 123	1	IS 8Ch OF 140
1	IS 7Ch OF 124	1	IS 8Dh OF 141
1	IS 7Dh OF 125	A	IS 8Eh OF 142
C	IS 80h OF 128	A	IS 8Fh OF 143
u	IS 81h OF 129	E	IS 90h OF 144
e	IS 82h OF 130	a	IS 91h OF 145
a	IS 83h OF 131	A	IS 92h OF 146
u	IS 84h OF 132	o	IS 93h OF 147
a	IS 85h OF 133	o	IS 94h OF 148
a	IS 86h OF 134	o	IS 95h OF 149
C	IS 87h OF 135	o	IS 96h OF 150
e	IS 88h OF 136	u	IS 97h OF 151
e	IS 89h OF 137	S	IS 98h OF 152
e	IS 8Ah OF 138	o	IS 99h OF 153
I	IS 8Bh OF 139	U	IS 9Ah OF 154
F	IS 9Bh OF 155	~	IS 9Bh OF 155
K	IS 9Ch OF 156	7	IS 9Ch OF 156
V	IS 9Dh OF 157	1	IS 9Dh OF 157
M	IS 9Eh OF 158	1	IS 9Eh OF 158
J	IS 9Fh OF 159	1	IS 9Fh OF 159
a	IS A0h OF 160	1	IS A0h OF 160
1	IS A1h OF 161	1	IS A1h OF 161
o	IS A2h OF 162	1	IS A2h OF 162
u	IS A3h OF 163	1	IS A3h OF 163
n	IS A4h OF 164	1	IS A4h OF 164
N	IS A5h OF 165	1	IS A5h OF 165
a	IS A6h OF 166	1	IS A6h OF 166
v	IS A7h OF 167	1	IS A7h OF 167
z	IS A8h OF 168	1	IS A8h OF 168
		1	IS A9h OF 169
		1	IS AAh OF 170
		1	IS ABh OF 171
		1	IS Ach OF 172
		1	IS Adh OF 173
		1	IS AEh OF 174
		1	IS AFh OF 175
		1	IS F1h OF 225
		1	IS F2h OF 226
		1	IS F3h OF 227
		1	IS F4h OF 228
		1	IS F5h OF 229
		1	IS F6h OF 230
		1	IS F7h OF 231
		1	IS F8h OF 232
		1	IS F9h OF 233

(d omitted after decimal for clarity)

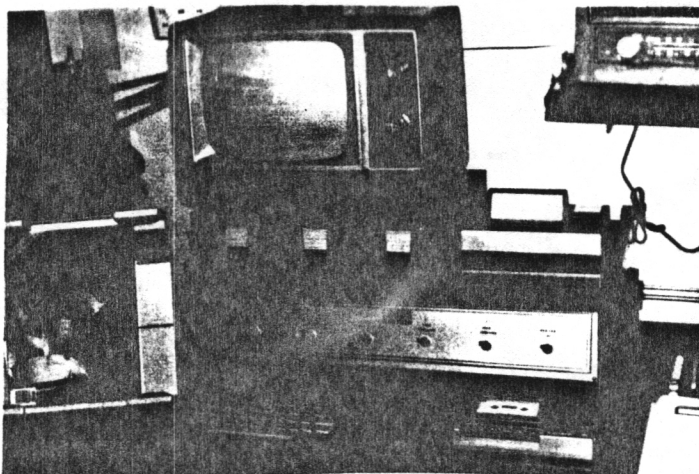
The above list shows the decimal and hex codes for the special characters available in the 8 bit mode. To use the EP 44 with the Tasman Serial Interface and access these with TASWORD II word processor set the modes as follows:

Baud Rate 110, Bit Length 8, Parity N, New Line CR+LF, Code 8 bit, ERY (in some cases ER set to N may be better so try both). IN ORDER FOR THE SPECIAL CHARACTERS TO PRINT "CODE" MUST BE 8-BIT!

Using the Tasword Main Menu select "define graphics/printer g" and you can assign any 16 above as the graphics character on keys 1 to 8 shifted and unshifted. This can be saved with Tasword II for future use. The form of entering is "code graphics character" which you select from list displayed when it goes to bottom first enter 27, then ENTER, then decimal or table above for the special sign or character shown, then ENTER. Now select the next key character to modify. You can see the Tasword table change so it is easier done than explained.

BOB HOWARD, WADDLE





December 2, 1985

Dear Fellow T/S Users,

I presently own a T/S 2048 and am very pleased with it and all the peripherals attached. When I heard that a disc drive is available and that it is a 3" drive that made me more excited and intrigued.

I know there are other interfaces on the market and some may be a little faster and pricier but the Portuguese set up seems to be the one for me.

Inclosed you will find a picture of what I call my controller box which houses all the power supplies, a Radio Shack amplifier, a UHF to VHF converter and now two 3" Hitachi disc drives SS/DD which at this time are not operating.

The two drives are the reason for this letter as I have no documentation as to how to hook them up to any interface. I don't think they are Sugart compatible as all they have on the back side is a 28 Header pin connector. No separate in power connection as on other drives.

I bought the drives from a mail order house but no docs were included and several calls to Hitachi of America were negative as to where I could get help as Hitachi has gone out of this 3" drive business.

While reading the May issue of SUN Magazine and the article about the Portuguese set up I came across your name and address and reading about your knowledge and know how of this unit, it seems that if anyone could know about this disc drive hook up it might be you or your group.

At the present I am the Librarian of the Pittsburgh Area Computer Club (PACC) in the Times/Sinclair Sq. Our Sig is not large at this time having about 35 members but growing and with much to offer.

A few of our members myself included are interested in RGB monitors as none in the group has one or has seen a RGB connected to a 2048. Any input will be greatly appreciated.

Hope to hear from you soon  
I remain yours truly

Rich Norris  
1200 Prospect Road  
Pittsburgh, Pa. 15227

412-282-7873

Rich Norris - I think you'll find an answer right here in Letters to LIST.

807 N. Fairway Rd.  
Glenside, PA 19038  
November 19, 1985

Long Island Sinclair Times  
P.O. Box 438  
Centerport, NY 11721

Sir:

The attached list represents a T/S-2048 inventory that I have for sale. Please distribute the list to your membership for consideration, thank you.

Sincerely,

*M. M. Sponovich*  
Michael M. Sponovich

#### T/S-2048 Inventory

Item	Value	Price
T/S-2048 (in box w/all accessories)	150.00	100.00
T/S-2048 (in box w/all accessories)	150.00	100.00
AERCO Centronics // Printer IFC	69.95	50.00
TASVORD TWO Word Processor	48.95	30.00
PRO/FILE 2048 Data Base Program (w/ 143 page manual)	28.95	20.00
VU-CALC Spreadsheet Program	16.00	10.00
VU-3B Graphics Program	16.00	10.00
UPLOAD 2000 Software Converter	19.95	15.00
ANDROIDS	11.00	7.00
VOICE CHESS	22.45	15.00
WAR in the EAST	17.45	15.00
LIMHOLD Stock Analysis	19.00	15.00
ANALYSIS Stock Analysis	15.00	10.00
PORTFOLIO Investment Data Base	15.00	10.00
Assorted Financial/Educational S/W	50.00	30.00
T/S-2048 Beginner/Intermediate Guide	9.95	5.00
	689.65	442.00

Best, reasonable offers will be accepted!

Dec 11, 1985

L.I.S.T. Users Group  
P.O. Box 438  
Centerport, NY 11721-0438

Dear L.I.S.T.ers:

Holiday Greetings from the heart of the freezing Midwest!

I've just realized that it's been a whole year since I've become a member...and consequently it's been a whole year since you've heard from me! I've been meaning to drop you a line or two since then (after all, I hear from you once a month...) when BLAMMO...a whole year goes by! Gosh, am I havin' fun, or what!? In any event, you were bound to hear from me sooner or later, if only to tell you I'm renewing my membership (check enclosed).

Well, I'm renewing my membership (see previous note regarding enclosed check), and I gotta say that you guys are doing a great job! I raise a glass of holiday cheer to the last twelve months and look forward to the next twelve. I only wish your meetings were a little closer to my house so I can join in and help out. As a matter of fact, I'll be in the New York area the week of Christmas (visiting the In-laws in Port Chester), it's too bad you're not having a meeting, I could stop in and at least shake your hand.

I'll tell you what I will do when I'm in the area, though. Library Tape #3.5 just left my house a couple days ago. It's making two more stops before it comes back your way. When it showed up here I was pleasantly surprised and somewhat unprepared. I've been working on two programs that I want to donate to the library, but one's not quite finished and the other has a persistent bug in it. Rather than holding up the tape, I sent it on without my programs. By the time I get to Port Chester, I'll have the one debugged and on cassette (hopefully I'll have both). I'll drop it in the mail to ya when I get there.

Just one other thing before I close. I just recently got a hold of a great keyboard that's big and has lots of keys (its got a case big enough to drown two TS1000's in...). I'm really looking forward to turning it into a "SUPER 1000" with all the extras, but since I'm a software kinda guy I need a little help. Could you point me in the direction of a good article on how to put together what it takes to wire up extra keys for shifted functions such as cursor arrows, DELETE, GRAPHICS, EDIT, and the like? The keyboard's got a cursor pad that I'd really like to implement. I'm also interested in implementing a REPEATING key if I could find a circuit for it. I'd really appreciate your help, if you could.

Well, time to close for now. You'll definitely be hearing again from me soon, though, so until then...

SEASON'S GREETINGS!

*Mike Leidel*

Mike Leidel  
415 Greenwood  
Muscatine, IA 52761

Your circuit is printed in this issue. I'll see what we can do about that article. I think it's John Oligers and may be public domain. Do you know about the modification put out by Tom Bent of Syncware News?

John Oliger Co.  
11601 Wridbey Drive  
Cumberland, IN 46229

Dear John,

HOORAY! Your A and B boards for the JLO Disk I/O arrived on December 19 in West Covina, which made my Christmas!

Now would you believe your kit-prototype system beat out all the commercial units I had ordered in arriving, so it was the first to allow me to try my 3-inch AMDEK system.

First I had ordered at least 4 months ago...

A Timex-Portugal system less drives from xxx.  
A Kempston (English) Disk from Chara in Sweden.

When nothing was received from xxx except an Interface III, I called and was informed that he was having trouble with Timex-Portugal and was dropping the line in favor of the Kempston. So I said change my order to a Kempston plus EMU-4 edge adaptor and a ROM Switch since xxx said Kempston didn't work with EMU-OMNI or other cartridge port ROMs. (I was able to cancel my order, just before receiving your I/O. I think I was aced out by Zebra on the Timex-Portugal stuff.)

So I may still get a Kempston from Sweden... however xxx last week when I cancelled my order, said Kempston had changed the design (perhaps to match Spectrum Plus or 128) and he had to return the last two received as they were putting gargage on the screen. So only "old" Kempstons work! (This FYI only to you!)

Your system so good AMDEK III worked with its cable out-of-the box, no settings changed! The JLO SAFE SYSTEM tops because:

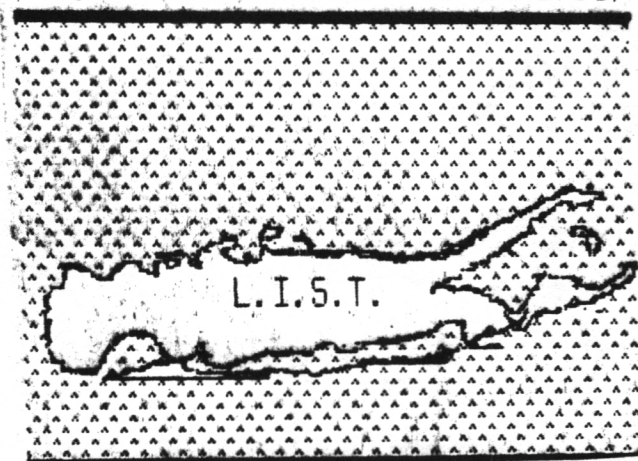
1. No edge adapter needed as with foreign systems.
2. Transparent as to whether Spectrum or 2068 mode.
3. Super easy two key-strokes to program in the well known Sinclair tradition... NO IBMese to operate drive.
4. Approx. 50K save with machine parameters intact and files embedded ideal for Profile 2068 as don't have to load program and file.
5. Directory and 4 files per side wastful for short program but convenience far outways this and you know that even a full Spectrum program will fit.

I have all the parts to build my NMI but can't find a place around here that has HC or HCT chips. Enclosed is \$2 could you send me a 74HC74 or 74HCT74D. I may build a lucite box around the interface and put the button on a hinged lid. Too pretty to hide like old Mc Intosh Amplifiers with the exposed tubes.

Editors note: the name of the other vendor was deleted at Bob's request.

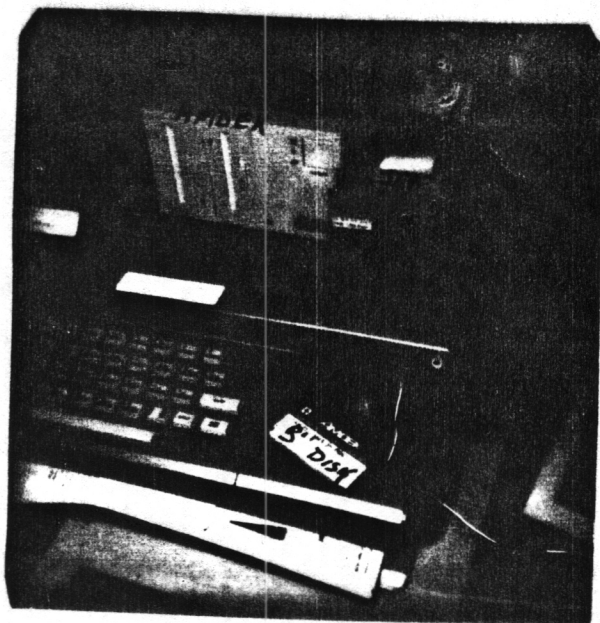
R.L. HOWARD

## Long Island Sinclair Timex Group



MORE: Bob Howard - WA6DL1

Load (W/O'') Produces a directory, 2 key #'s for a file and it's loaded.  
Please pass this info on the Heinz H.  
TASMAN I/O works on JLO IF also.  
The NMI will function like Interface III (Breaks into programs so you can make disk backups)



Sirs or P. Donnelly:

I wish Andy Gippet would write soon more on putting TaswordII on disk drive program because you people who are technically-trained don't realize that just hobbyist - TS users are oriented to the cassette programs that load in a lump, save in a lump, and have not that directory capability of "need some more info, back to the disk and whomp - here it is". With Aerco, Oliger, and the Portuguese DD's all coming at us. (Mine from EMC (Portuguese) arrived day before yesterday, you can't publish too much for those of us who are going to think "trees", "pathnames:", etc. or even "pages" like Aerco's DOS.

Thanks  
J. Kealy

Well, Andy or John G? can you help?

Dear List

I guess it's time for renewal again. I've been meaning to write for quite a while now but have been putting it off. I have several items to pass on to other members.

Enclosed is a circuit that I use that allows two 16K timex ramaks to be connected to my T/S 1000. This gives me 49151 for ramtop. I think with further ram decoding I will be able to work in a third ramak in the 48 to 64K area. If you have SD#1 in the library I would like to get a copy of the article dealing with ram decoding. If there is a fee for that please let me know.

I have a modified operating system on EPROM for the T/S 1000. The printer routines have been rewritten to accommodate the Byte-Back parallel printer interface. All original routine entry points have been maintained. The new printer routines work along the same lines as the universal printer driver software in that it supports the three LPRINT, COPY, and LLIST. Installation requires the removal of the BK PROM and plugging in a 2764 BK EPROM in it's place. Some T/S 1000's have the original PROM soldered in. After installation, printing through the BYTE-BACK I/F is as easy as typing LPRINT, COPY, or LLIST. 80 columns is supported. I have permission from TIMEX to produce upto 100 EPROM's. The EPROM and documentation is available for \$20.00

Thanks Don

Thank you  
Don Bailey  
40 Aspen  
Great Falls, MT  
59405

RICHARD J. CUNNINGHAM  
133-50 118 STREET  
S. OZONE PARK N.Y. 11420

DEC. 12, 1985

LIST GROUP  
P.O. BOX 438  
CENTERPORT, N.Y.  
11721-0438

ATTN: PAUL DONNELLY

Dear Paul,

I am enclosing herewith my check for \$15 to renew my membership for the coming year.

It has been an eventful year for me computerwise. You may recall my past letters regarding trouble with the R&J Microdrives. They have been running for months now with no trouble. That outfit does provide considerate service.

I told you in my last letter in June of my purchase of the Spectravideo 328. It is a lovely machine and I learned a lot from it. But it took months to locate sources of hardware so I could upgrade it. And to upgrade it would cost over \$600 (2 drives, CPM, 80 column, etc.). So I sold it. At a loss of course. But it was worth it for the time I had it.

Now I have opted for the Commodore C128. I got the computer and 1571 drive from Crazy Eddie for \$465. It will be a great challenge since it has three modes: C64, C128, CP/M. And I have not, till now, ever used a disk drive. In addition it has a built in assembler, disassembler, and MC monitor. Lots to learn.

Yes, Paul, I did consider the Sinclair QL. It may well be a better machine. But I did want to get into some more standard stuff, disk drives, MS Basic, etc. And price-wise both machines are close. But after the Spectravideo I don't want another potential orphan. It is still a hassle getting hardware and software for the 2068 and were it not for groups such as ours it, too, would be dead. Then, too, there are rumors or Sinclair filing for bankruptcy. Think that is true? Clive is a genius with computers but not too sharp in business.

Finally there is the vast software for Commodore and CP/M. and the readily available hardware and service for the 128.

Have no concern about my interest in the 2068. I still love it and will work with it often. I have too many programs I have written for it to bother transposing. And in many respects it is much easier to use now with the microdrive.

I do have two problems that are most discouraging, however, and perhaps someone out there can help me. The most vexing is the spacerbar. The spacerbar must be hit square in the middle or it doesn't work. It is really discouraging and sometimes I want to give up because of the errors it causes.

Is there anyway I can open the case and correct this myself or is it a factory job? If it means sending it out I will give up on the whole system I guess.

The second problem is less vexing. I now have a composite/RGBI dual monitor. And although it gives great color with the C128 I get no color with the 2068 and the Composite monitor using the video port on the computer. Can this be remedied? The 64 column mode by the way, is not greatly enhanced even with the monitor (350x350 res.). I assume it is the signal from the computer.

Well, that's it Paul. Hope you can answer my questions. And I look forward to another year with my friends from LIST.

Best Regards,  
Richard Cunningham

Follow 2068 users,

December 14, 1985

We here at SINCUS-the Sinclair Computer Users Society, a small upstate New York user group have a program we wish to share with you-CLONE. We are a not for profit organization, and like many such groups find ourselves trying to keep from running in the red. With the sale of CLONE, or rather the right to sell CLONE we hope to raise a little green and give other groups the chance to make a little cash. We are making two offers, and should either be accepted, the other will be withdrawn.

The first is club site rights- a club pays us \$50 for the master and documentation and can make 50 copies at whatever price it wishes to sell them at. After the first 50 are sold, then we ask \$.48 per sale. The club may sell to any of its members or guests at its meetings. As many club site rights will be sold as applied for.

Second, the national distributing rights, a group or individual pays us \$250 for the national (US and Canada) rights, and \$.42 for each sale. Only one national right will be sold. Counter offers will be entertained.

What is CLONE?

A product of the fertile mind of our one and only Wes Brzozowski a wizard recognized by other wizards in the 2068 world, CLONE will copy almost any program you can run on your TS2068, so you can make back up copies of any of your programs.

What about Spectrum programs?

CLONE will work with a TS2068 with a Spectrum ROM installed, a Spectrum emulator, provided the second ROM, the EXROM has not been removed.

Is that all, copy programs?

It has a HEADER READER feature, so if you want to save to disc or micro-drive you can see how the program is laid out. It copies in BLOCK COPY, if you have one tape recorder, you can save most programs in this manner. However with two recorders you can use LAST RESORT and copy almost any Spectrum software. A feature calibrates the program timing by reading a small sample and figuring how wide the pulses need to be extended.

Documentation ready?

Yes, four pages-but quite user friendly with menus on most screens.

Basically we have the program, that could realistically sell for \$20, you have the membership, and the tools to produce the program with little investment and with time on the part of a couple members, your club could have a substantial increase in the cash flow department. We sold trial pieces at \$5.00, and sold 10 at the first meeting. These are the only sales of this fine program. After January 15, 1986, SINCUS will market CLONE to its corresponding members. These sales "road tested" CLONE for 5 months, and Wes saw the bugs crop up and one by one were shot down. It is ready and works great!

IN NO CASE ARE WE CONDONING the illegal copying of software WITH THIS PRODUCT.

The product is to be marketed under the name "CLONE", by Wes Brzozowski, SINCUS, POB 36 Johnson City, NY 13790. The program is copyrighted by SINCUS holds all rights. The title page will be modified to carry the vendor's name and address.

If anyone buys the national distributing rights, the offer for site rights will be immediately withdrawn. If any group buys the site rights, the national rights offer will be withdrawn.

To protect your possible interest in this venture, send a check for the amount indicated above, made out to "SINCUS". Send a phone number, name and time of person to be contacted. We will notify all interested parties on their offer as soon as possible. No check will be cashed until we talk with the interested party, to clarify what the program will do or want to do and how the "rights" work.

We hope to hear from you soon, we are not trying to get "legal" in this but we are trying to spell out what we are selling, and what you can expect. We want satisfied customers, both buyers of rights and their buyers. Our names are on the line. You can get in touch with me or Wes most any evening at the numbers listed. We hope that this program gives its users protection from lost data on their expensive commercial programs. If interested write or call SOON,

Sincerely,

Paul Hill

CALL for business information-----Paul Hill, Secretary, SINCUS  
(607) 798-7219 4-9pm  
CALL for technical information-----Wes Brzozowski, SINCUS  
(607) 785-7007 6-9pm

OR write either at---SINCUS  
POB 36  
Johnson City, NY 13790

# LIST

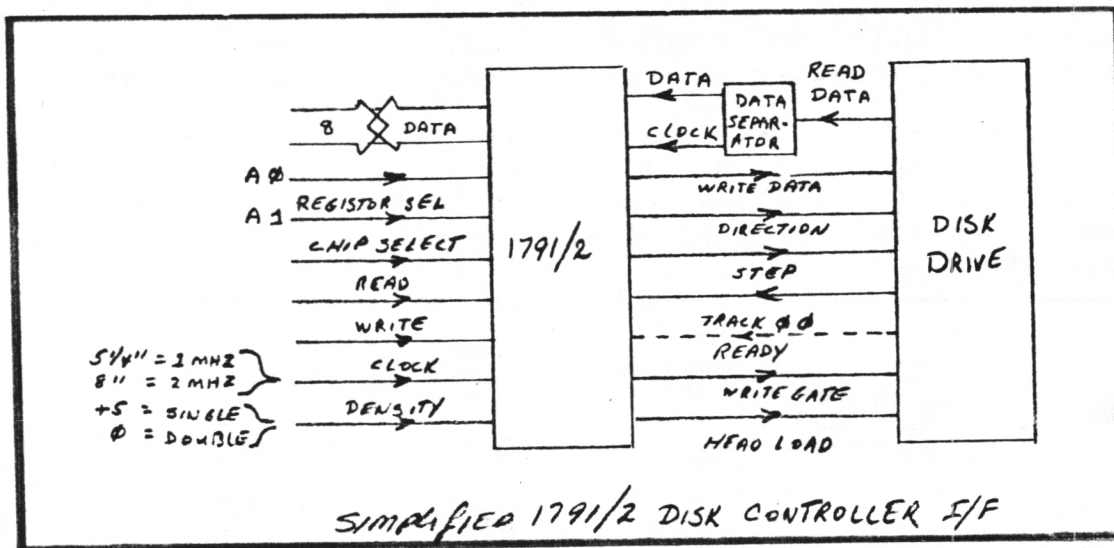


## DISK DRIVE CONTROL AND INTERFACING (Part 3)

### THE DISK CONTROLLER

Now that the details of the disk's own electronics and the intricacies of soft sectoring have been explained (Parts 1 & 2), you should be able to see what is left for the disk controller to do. Most controllers on the market today are designed around a single chip (IC) - either the 8271 or one of the series of Western Digital 179X controllers. If you need to know how one of these chips work, then there is no substitute for a data sheet, however here is a short explanation of the 1791/2 operation.

A typical circuit can be seen in the diagram below:



From the software point of view the controller looks like a number of registers - command, status, track, sector and data to be precise. The command register and the status register are used by the computer to give the disk controller its instructions and to find out how they are progressing. The track and sector registers are used to hold the disk address of the sector that an instruction refers to and the data register is used to send or receive data from the disk drive.

Given a disk that is already formatted, the needed operation to write some data to a sector is straightforward. If the track register contains the number of the track that the head is currently assumed to be over, then the number of the track required is stored in the data register and a SEEK command code is stored in the command register. A SEEK command causes the disk controller to set the stepping direction and to output stepping pulses until the track register contains the same number as the data register. If any point during disk operation that the track register is found not to contain the track number then an error is reported and usually the software will issue a RESTORE command to step the head out until the track zero (T00) switch is activated. This action moves the head to track zero so that the track register can be cleared (sometimes referred to as calibration).

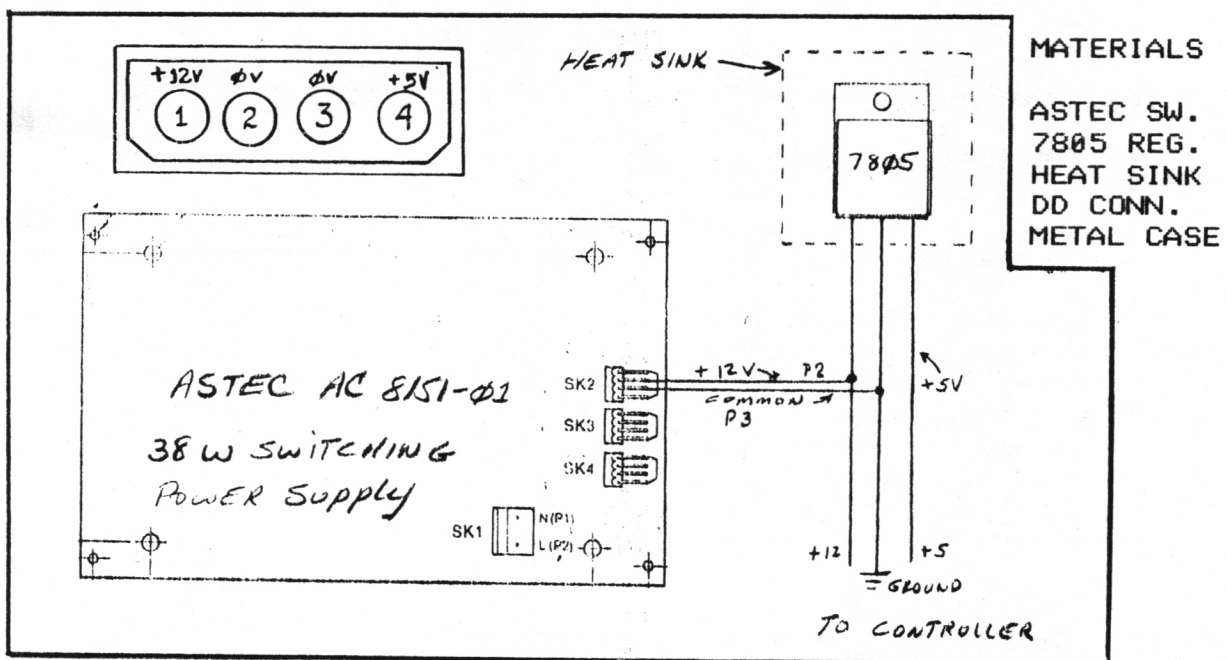
## ALTERNATE TIMEX PORTUGAL DISK DRIVE POWER SUPPLY

As promised at the November meeting, is the schematic for an isolated + 5 volt controller source from the ASTEC AC 8151-01 switching power supply. Note that the 5 volt regulator should be installed on a heat sink as it must dissipate a minimum of 7 volts from the +12 volt leg of the switching power supply.

If the power supply is used in close proximity with the controller and disk drives, then it should be enclosed in a metal case to prevent unwanted interference due to the switching component within the power supply.

The ASTEC switcher can handle 3 five and one quarter (5 1/4) inch disk drives with ease. The added 5 volt regulator for the controller will reduce the drive capability to two drives and operate continuously without any chance of overheating.

If you have a spare electrolytic capacitor around; any value from 10 - 100 mf at 25 volts; you can add it between the +12 volt pin on SK2 and the common pin of the same connector. The controller supply will operate fine with or without the capacitor.



5 VOLT DC CONTROLLER SOURCE ADDITION TO THE ASTEC SWITCHER P/S

.....Bob Gilder

February  
1986

L.I.S.T.ING



Once the head is positioned over the desired track, the sector register is loaded with the desired sector and a READ SECTOR command is issued. This causes the disk controller to read the ID fields as they pass under the head until one of the correct track and sector number is located. The data in the corresponding data field is read in. If an ID field with the right track and sector is not found within one revolution, an error is reported and the disk software usually issues a RESTORE command and tries a few times before giving up and reporting a disk error to the user. Writing a sector follows the same stages of head positioning and of reading ID fields to find the correct sector only; instead of reading the data in, the new data is written out to the data field.

The only remaining problem is how a disk ever gets formatted in the first place. The ID fields cannot be written using a WRITE SECTOR command because this only changes data in the data field. The answer is that the 1791/2 and most other controller chips include a READ TRACK and a WRITE TRACK command. Both of these commands ignore the sector structure of a track and simply take the index pulse as a marker for the start of a track which is either read or written in its entirety. To format a disk, the formatter simply writes the track pattern described earlier onto each track in turn using the WRITE TRACK command.

#### WORKING UPWARDS

We have come a long way since this series of articles first appeared in LIST, but there is still some way to go before the level of disk and program files is reached. So far, all that the disk drive and the disk controller can do for us is store and recall chunks of data in the form of sectors. The final stage in making the floppy disk useful is converting this collection of sectors into named files. This is where hardware and electronics gives way to software - the DOS or DISK OPERATING SYSTEM.

If time is on my side and positive response from the past DDC&I articles is forthcoming, I will then continue the series with an explanation of the disk drive hardware and attempt to outline the DOS structure. Please advise your LIST editor.

.....Bob Gilder

#### A glossary of keyswitch technologies

##### ■ Electromechanical:

Two moving metal contacts touch one another in a butting action, producing the keyswitch actuation.

##### ■ Capacitive:

A hinged foam pad or metal plate moves toward a plate on a pc-board substrate, generating a change in capacitance and the subsequent key actuation.

##### ■ Hall-effect:

Pressing a key toggles on a solid-state Hall-effect switch in the presence of a permanent magnetic field. The switch incorporates an IC containing a Hall generator in addition to a trigger circuit and amplifier.

##### ■ Ferrite-core:

Key actuation causes a single-turn transformer to couple a scanning pulse to a sensing wire. A plunger magnet saturates the switch's ferrite core in the off position to inhibit coupling.

##### ■ Reed:

A permanent magnet built into the switch plunger moves into close proximity with the reed, which reacts by flexing and opening the contact.

##### ■ Membrane:

A conductive switch pattern containing silver contacts is screened onto two flexible Mylar sheets, both sandwiching a spacer layer. Actuating the keyswitch causes the upper membrane layer to press downward and make contact with the lower layer.

##### ■ Conductive-rubber/elastomer:

Molded silicone rubber or nonsilicone rubber elastomer domes, each containing a bonded carbon pad, contact an etched switching element on a pc board.

Table 1. Comparative Keyswitch Reliability	
Technologies	Operating cycles (in millions)
Electromechanical	10-100
Capacitive	100
Hall-effect	100
Ferrite-core	100
Reed	100
Conductive-rubber/elastomer (rubber, lowest; elastomer, highest)	5-100
Membrane	10-75

\*\*\*\*\*  
**KEYBOARD MANIA - Part 1**

\*\*\*\*\*  
By Cedric R. Bastiaans Page A

## I. INTRODUCTION

Sir Clive, the man who brought powerful, but affordable computers to the masses (and still does, in mainland China for instance), appears not to be too pre-occupied with keyboards. Both the ZX80 and the 81 sported so-called membrane keyboards. Granted, they are inexpensive and quite reliable, but they really have no business being on a computer. They are user-UNfriendly and only belong on appliances, where the "keys" get activated only once in a while (blenders, toaster ovens and the like). Membrane keyswitch assemblies are still around, but they have come a long way, now with full travel actuating keys. It is the membrane keyboard, which is directly activated by human fingers, that I despise. The Commodore 64 would not have enjoyed its immense worldwide popularity, if Jack Tramiel would have given it a membrane KB like the ZX81 (or TS1000).

Anyway, I think that a real, full travel keyboard (KB) is a must for any computer! It was one of the first things I did, back in 1981: put a professional KB on my ZX81. I still have it; it has 10 dedicated keys, i.e. keys that effect functions that would otherwise require the actuation of two keys simultaneously.

I know that many amongst you think that the TS2068 KB (which is not a membrane keyboard, but is not a full travel type either), is heaven compared to the KB on the ZX or TS1000. It is without a doubt a great improvement, but it still is a very inadequate KB for computers, certainly if the machine is used for word processing. Should I remind you of the so-called space bar with its annoying problems of sticking and multiple spaces or not working at all unless you hit it dead center? If you have never worked with a real KB, you just don't know how pleasurable keying on a full travel KB is. Even the QL, with its membrane KB activated by wobbly rubber blocks is far from meeting the criteria of a pro KB.

I have improved a couple of computers with pro keyboards and would like to share with you a couple of circuits I have used for dedicated keys, give some pointers on KB's in general and suggestions on improved keytops, all for the TS2068.

## II. CHOICE OF KEYBOARD

The KB should be of the mechanical switch type, with full travel keys and positive action. There are many surplus or reject KB's available from a variety of sources. Make certain that you get one with straight electrical contacts, so-called single-pole, single-throw (SPST) types. There are KB's that use exotic ways of "making contact", such as the ones using capacitive or Hall-effect "switches". Not only are these expensive, but they are also very difficult to adapt to our needs.

Also, don't buy so-called ASCII-encoded KB's; the electronic circuitry on it is not needed and therefore wasted. Sometimes though, they can be had real cheap; just make sure that the keys are SPST mechanical switches and discard the electronics.

And beware of membrane KB's (even though they might be of the full travel type), because their matrix is practically always part of the flexible membrane printed circuit. Since it can not be expected that the matrix of a keyboard, not originally built for a TS computer, would be identical to the matrix we need, you should expect having to modify the printed circuit board (PCB) of the KB you acquire. This entails cutting copper traces and making new wire connections. And that is something impossible to do with the membrane circuit.

As I am writing this (Dec.15'85), Radio Shack has a special purchase item 277-1020, a 75-key KB selling for \$6. It is a membrane type with very good and light-touch, full travel, beautifully sculptured keys. It has however, an incompatible matrix and it can not be easily modified. A real pity...

As far as the tactile "feel" of the KB keys goes, that is a matter of personal taste, but maybe I can give you some guidance. One of the very best KB "feels" can be experienced with the KB of the Canon Typestar 5 electronic typewriter.

You could therefore enter a store which carries them and try one out. Who knows? Maybe you will even buy one! (I think it's a fabulous typewriter). But since you are a member of that masochistic lot, also known as Sinclair computer addicts, and have endured pain with chintzy KB's for heaven knows how long, you probably would go "gaga" about any full travel KB! A good source for surplus keyboards is Jameco Electronics, 1355 Shoreway Road, Belmont CA 94002; their item KB54, a 54-key KB sells for \$10. Another one is ITC, 9119 De Soto Avenue, Chatsworth CA 91311, but they have no catalog and do not accept mail orders.

### III. KEYBOARD MATRIX

In the foregoing, the word "matrix" has been used several times and therefore requires explanation, in case you don't already know. The TS2068 has 42 keys, but 2 of them are in duplicate and wired in parallel, CAPS SHIFT and BREAK (or SPACE), so that a matrix of three groups of lines, one with 5 and two of 4 lines each, can be and is indeed used to enter the 40 (=5x2x4) principal key functions.

This matrix is shown in Figure 1.

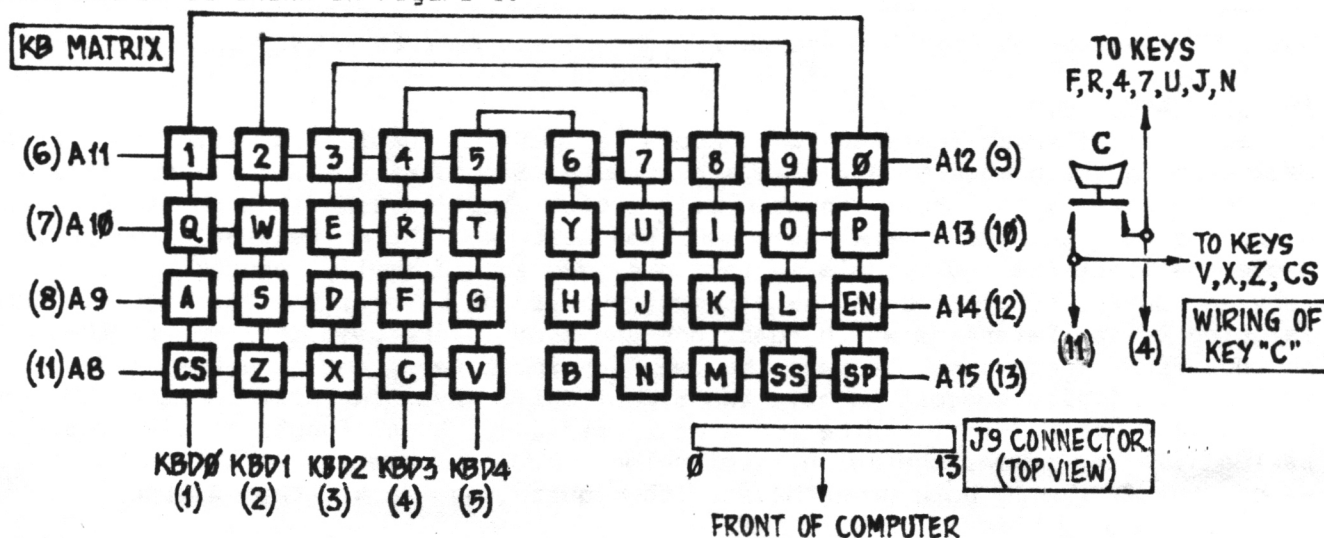


FIGURE 1

Each block depicts a key and is marked with the principal character on that key. Whenever a key is pressed, the two lines intersecting at the corresponding block become electrically connected. If you would press key "5", lines A11 and KBD4 will connect, whereas pressing "6" joins lines A12 and KBD4. This matrix will be helpful in modifying the printed matrix of any suitable surplus KB you might purchase. Incidentally, the matrix for the ZX81/TS1000 is almost identical to the matrix shown in Fig.1; the only difference is that a "period (.)" key is in place of the Symbol Shift key, and the line numbering is different.

Since we deal with logic circuits and extremely low electrical currents, the key contact need not have the low resistance normally encountered in mechanical switches. A contact resistance of several hundreds of ohms will still generate the desired function and under certain conditions will even be beneficial, as we will see later.

The lines connect to the 14-pin KB Interface Connector J9, which is on the main PCB inside the computer. This connector has .100" pin spacing and normally mates with the flex cable of the original TS2068 KB, but the surplus KB can easily be connected with a flat cable and a connector made of headers for socket connectors, which come in strips of 36-pin size, notched for easy breaking to desired length. If you wish, you can of course unsolder and discard connector J9 altogether and solder a flat cable, much like an umbilical cord of the KB, directly to the computer's PCB. The connector pinout is also shown in Fig.1; #0 is ground, the remaining 13 (=5+4+4) pins are the KBD and A lines and these pin numbers are also shown in parentheses near the line identifications of the matrix.



The illustration also shows how the two terminals of each key-switch should be connected to the lines.

To facilitate the choice of connections and circuits for dedicated keys, and also the check-out of matrix wiring after it has been modified, the table of Fig.2 has been composed. It shows for each principal character and function, the required connections, which are indicated as groups of pin-out numbers of J9.

Thus, if for instance the Symbol Shift key is pressed, pins (or lines) 2 and 13 should show an electrical connection, which opens up again when the key is released.

A 1+8	F 4+8	K 3+12	P 1+10	U 4+10	Z 2+11	5 5+6	O 1+9
B 5+13	G 5+8	L 2+12	Q 1+7	V 5+11	1 1+6	6 5+9	SS 2+13
C 4+11	H 5+12	M 3+13	R 4+7	W 2+7	2 2+6	7 4+9	CS 1+11
D 3+8	I 3+10	N 4+13	S 2+8	X 3+11	3 3+6	8 3+9	SP 1+13
E 3+7	J 4+12	O 2+10	T 5+7	Y 5+10	4 4+6	9 2+9	EN 1+12

Note: SS = Symbol Shift; CS = Cap Shift; SP = Space Bar; EN = ENTER

FIGURE 2

#### IV. DEDICATED KEYS

The question of which functions or symbols to put on dedicated keys is largely dependent on the number of extra keys available. Secondly, it is a matter of personal taste; I have read a number of articles about keyboards with some simple dedicated keys and was always rather puzzled as to why the writers of those articles chose the functions and symbols as they did. You should really ponder this matter very seriously, but of course the more extra keys the KB has, the easier the choice is going to be. Determine which functions and symbols are used the most; they are obvious first contenders. Do keep the two Caps Shift keys, one on either side of the bottom row. I also suggest to have two Symbol Shift keys, one next to each CS key. DELETE would be my first choice for a dedicated key, then function GRAPHICS, the period (.), the comma, the colon, semi-colon, the 4 arithmetic functions with the =sign, the ?, the !, both parentheses, the quotation mark, the \$-sign and the Extended Mode function.

The table of figure 3 shows suggested functions and symbols, together with the required KBD and A line junctions, again expressed in terms of the J9 pin numbers. Because they require the simultaneous actuation of either the SS or the CS keys, the required junctions each show TWO groups of connections, the first one of which is for either of these shift functions.

? 2+13/4+11	; 2+13/2+10	= 2+13/2+12	( 2+13/3+9	← 1+11/5+6	ED 1+11/1+6
! 2+13/1+6	+ 2+13/3+12	↑ 2+13/5+12	) 2+13/2+9	→ 1+11/3+9	CL 1+11/2+6
. 2+13/3+13	- 2+13/4+12	" 2+13/1+10	@ 2+13/2+6	↑ 1+11/4+9	GR 1+11/2+9
, 2+13/4+13	* 2+13/5+13	' 2+13/4+9	# 2+13/3+6	↓ 1+11/5+9	DE 1+11/1+9
: 2+13/2+11	/ 2+13/5+11	\$ 2+13/4+6			EM 1+11/2+13

Note: ED = EDIT; CL = CAPS LOCK; GR = GRAPHICS; DE = DELETE; EM = EXTENDED MODE

FIGURE 3

The table shows for instance that in order to create the \$-symbol, pins 2 and 13 should be connected (Symbol Shift), as well as at the same time pins 4 and 6 (the "4"-key). Another example is the semicolon; this character requires that pin 2 is again to be connected to pin 13 (SS), but ALSO to pin 10 (the "0"-key).

Still another example is the multiplication or asterisk symbol \*; it requires that pin 2 should connect to pin 13, which in turn should also connect to pin 5 ("B"-key).

With the help of the table Fig.2 you can of course determine the junction combinations necessary for any symbol or function not shown in the table Fig.3.

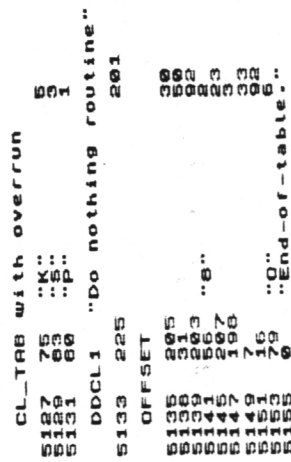
In the next installment of this article series we will discuss exactly how to effect all these connections.



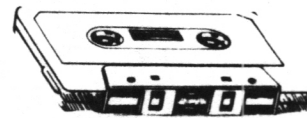


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## TURBO LOADERS

Perhaps one of the best ways to circumvent the ease with which a hacker can BREAK into your programs, is the use of the so-called "turbo" or "hyper" loader. Turbo loaders are machine code routines which change the way in which your computer reads tapes. Most are simply modified versions of the LOAD routine from ROM(or EXROM) with the speed parameters changed. If you have some of the newer Spectrum software, you may already have seen a turbo-loading program.

Turbo-load programs begin with a short BASIC loader, as usual. However, the difference between this mode and normal LOADING then becomes immediately apparent. Instead of the normal loading of a SCREEN\$ file, either a short bytes file containing the turbo load routine or, if that routine has been hidden in the BASIC variables, the first section of the program will load. You will probably note that the border patterns associated with this load are different than the normal one. If for example, the normal Sinclair routine was simply speeded up, the yellow and blue stripes appear narrower. If one were to listen to the sound of the tape, (s)he would hear a higher pitched tone sequence than normal. Again, this is due to the higher baud rate being used.

While we normally try to give simple concrete examples of how to implement the protection schemes we're discussing, re-writing the tape routines is a subject which almost requires a book in itself, if it is to be done right. Further, I haven't actually done it myself yet and don't much approve of the practice, for reasons discussed below. For those wishing to pursue the subject further though, the following guidance should prove useful;

1. The tape handling routines can be found in the Spectrum between 04C2(hex) and about 09F0(h). The main entry is at 0605.

2. Speeding up the LOADING and SAVEing process involves reducing the time delays in the 'SA-BYTES' and 'LD-BYTES' routines. These are established by setting values in the BC register pair in 8 different locations. Some of these are:

Location	Normal	2X speed	
0519	42 or 43	1B	} SAVE
051F	3E	16	
052C	31	09	
etc	B0	E1	} LOAD
"	B2	E3	
05CF	CB	EC	
	B0	E1	

etc. (See Logan and O'Hara, "Complete Spectrum ROM Disassembly")

3. You must relocate the ROM routines to an area in RAM. All absolute addresses in the routines must be replaced with new values, which reflect the offset from their original location. Remember, on the TS2068, the routines are in EXROM. It will probably prove simpler to just use a modified version of the

Spectrum routines in either case.

4. Only save the LOAD part of your new tape handling routines with your program. This might make it a little tougher for hackers to use. The really sophisticated ones, of course, will already have produced simple "compare bytes" programs, which will look for three or four key bytes of the Sinclair Load routines, and you would then have to actually write your own tape subroutines to be more secure. The "compare bytes" logic is so simple, unfortunately, that it can be written in BASIC. The hacker need only select three bytes of the original code, e.g. the three bytes which normally come before 052C, and search your BASIC loader for them, in order to find a reference point in your hyper loader.

To find, for example, the series of bytes for the code:

Mnemonics	which is	Hex	or	Decimal
Ld b,1		06,01		6,1
dec de		1B		27
ret		C9		201

A simple BASIC program would be:

```
10 Clear 31999: LOAD "" CODE 32000,32000
20 FOR i=32000 to 64000
30 IF PEEK i=6 and PEEK i+1=1 and PEEK i+2=27 and
PEEK i+3=201 THEN PRINT "Try the code at ";i
40 NEXT i
```

5. The easiest way to generate a "turbo" is to use the machine code program which appears in the May 1984 issue of Your Computer Magazine on page 119. Paul Rhodes article, entitled "Qiuckload", tells you how to achieve speed increases of up to 2.5 times normal, as well as how to slow down a save for even greater reliability. Some of his material is included here. His program is some 1872 bytes of POKEd-in MC.

6. Consider removing the checks for BREAK key pressed, which are in the Timex code. Better yet, add a routine of your own which causes a spectacular crash, if the break key is pressed.

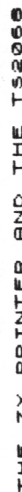
If you have successfully implemented your own hyperloader, only the really dedicated hacker, with access to a disassembler, will be able to "crack" your code. As a bonus, the higher frequencies involved, make it more difficult to copy your program tape-to-tape, so even hardware copies may not work.

That's not all that may not work, however. It is entirely possible that your new "hyper" tapes may not load, at all, on many users machines. Not only will this frustrate, and possibly discourage customers, but there is a significant potential for excessive service calls and complaints. Either situation is potentially fatal, particularly in the current TS market. Of course, as mentioned in our review of Interface Three, last month, there is no defence against a purely hardware oriented "breaker".

In our next installment, we'll take a look at "headerless files", another way to confuse the unwary.

## ZX Printer &amp; the 2058

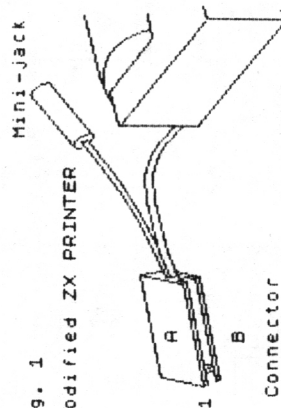
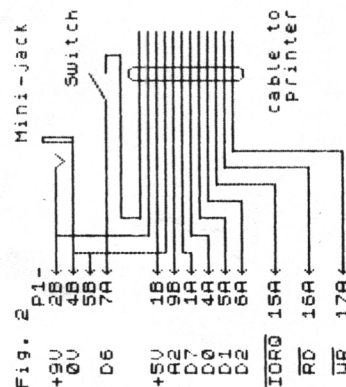
— W. Pedersen

[illegible][illegible][illegible][illegible]

30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1

Did not that old ZX PRINTER!

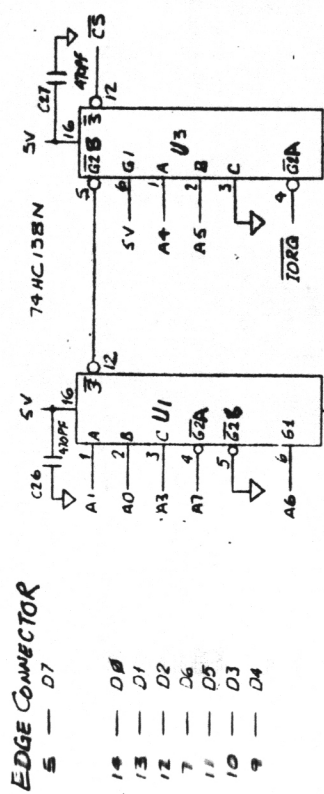
Fig. 1

Fig. 2  
Mini-jack

**THIS CIRCUIT WILL ENABLE A SECOND 16K-TIME RAMPC FOR 32K OF BASIC PROGRAM RAM.** FIRST YOU NEED SOME WAY OF SPLITTING THE EDGE OF THE 74LS138 OUTPUT FROM PIN 15 TO TWO PLUGS ON THE RAMPC'S AND A THIRD FOR A THROUGH CONNECTOR. RAMPC ONE (16 TO 32K) WILL (32 TO 48K) WILL HAVE ALL IT'S NORMAL CONNECTION'S EXCEPT THE A14 LINE. THE OUTPUT FROM PIN TWO OF THE 74LS04 IS SUBSTITUTED FOR THE A14 LINE TO THE SECOND RAMPC. AS WIRED ABOVE, THE 74LS138 WILL DECODE ADDRESSES IN 16K CHUNKS. THE OUTPUT FROM PIN 15 IS FOR ROM DECODING. IF YOU HAVE ANOTHER BOARD IN USE THAT DECODES FROM THIS CONNECTION IS NOT NECESSARY. THE 74LS04 IS A HEX INVERTER TO CHANGE THE ACTIVE LOW SIGNAL FROM THE 74LS138 TO AN ACTIVE HIGH. THE TIME RAMPC'S DRAW ALOT OF CURRENT, SO DEPENDING ON HOW MANY BOARDS YOU HAVE PLUGGED IN, YOU MAY CONSIDER PROVIDING A SEPERATE POWER SUPPLY (+5 & +9). THE MOD WORKS FINE ON A BOE T/S 1000.

TS 1000 Memory Expansion - D. Dailey



[illegible]

**PORT ASSIGNMENTS**  
Port 73H = DATA



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Mail sent to the old address must be forwarded there and will take longer to reach us.

**LIST**

Finally, you may have noticed that Paul Donnelly, the Founder of LIST, editor and a heavy contributor to our Newsletter, is stepping down. I believe I am reflecting the feeling of all LISTers, in thanking him for doing a wonderful job. Best Wishes to all the new officers, especially to Izzi, the new editor.

FOR YOUR INFORMATION ...

By N.A. PASHTOON

Here are some best buys. The ODD LOTS stores are selling all Atari, etc. games two for \$1.00. Buy STAR RAIDERS. For \$0.50 you get a 12 switch keypad, with an 8 wire cable with a DB-9 female plug. The cable is ideal is ideal for RGB, RS232 etc. The game cartridge is a perfect small project box( printer interface) for attachment to the TS2068 bus.

The other BEST BUY is the COMPLETE TS2050 modem board from Zebra Systems. Single quantity \$10.00, **3** for \$25.00, 10 for \$70.00. Even though these are sold as is, a statistical check by Cem B. revealed that 5 out of 6 were in perfect working condition. The bad one had a very minor problem which was visually discovered & repaired. Another two members, who bought two in the Jan. meeting, had both perfectly working boards. LIST will probably publish project(s) related to the modem board in the future.

On P.22, a circuit diagram of the TS2050 Modem is reproduced for your reference file.

The diagram was supplied to LIST by an anonymous West Coast benefactor of LIST, who probably has supplied LIST with other info. in the past. So thanks guy (or gal), whoever you are! **probably**

The circuit diagram explains why users have reported having a problem connecting the modem to Interface 1- microdrive combination( Steve Ishii, LIST Sept. '85). The reason is the port addresses utilized by the modem, namely, 73H, and 77H. Both addresses have zero bits in the lower nybble of the address, which is in conflict with the incomplete addressing scheme of the Spectrum. A solution seems to be possible.

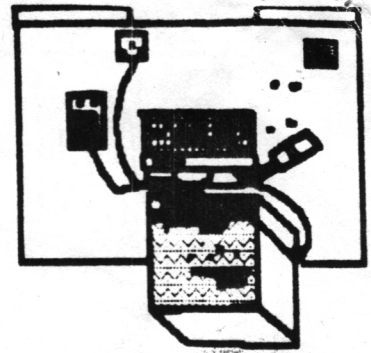
Oh Yes! In the Jan. '86 issue of CATS, LIST and SINCUS are a tie and win Mark Fisher's ad-hoc award for having the "most heavy-duty information". Thanks Mark. (What do we win?). Also LIST is cited and wins the award for being in the "least legible" category for printing 80% reduction of readers letters. (Shucks, can't win 'em all.)

All are equal  
in alcohol content.



Brewer: 4.5% by volume; Wine: 11% by volume  
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 Follow 110 across Rt 25 to Rt 25A  
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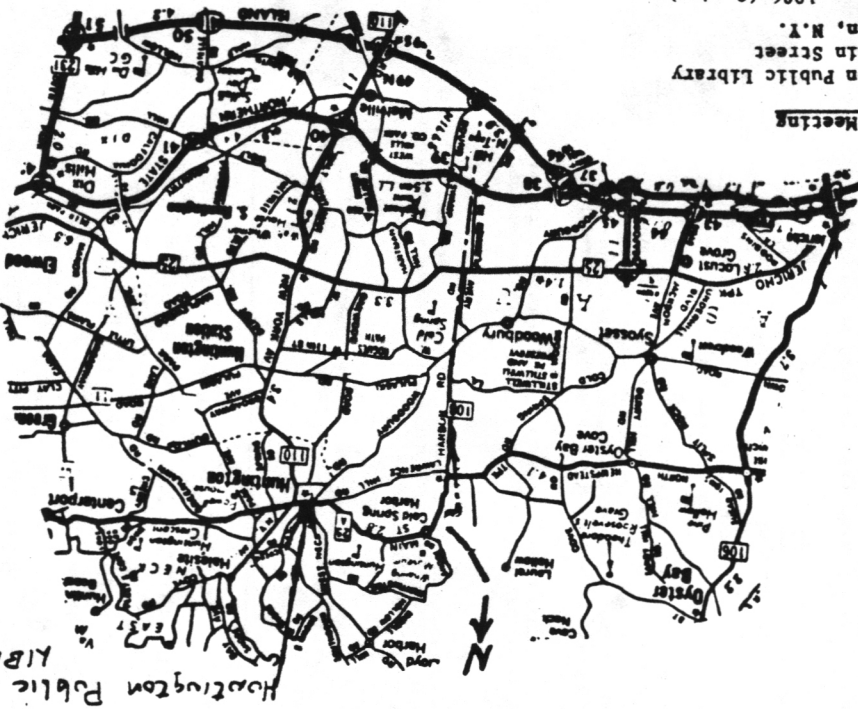
at 2:PM

February 9, 1986 (Sunday)

Huntington, N.Y.

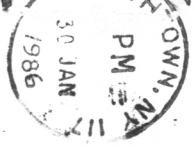
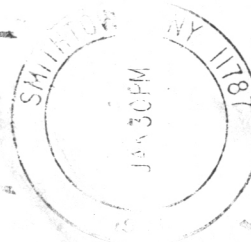
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